



**UNITED STATES DEPARTMENT OF COMMERCE**  
**Patent and Trademark Office**

Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
-----------------	-------------	----------------------	---------------------

EXAMINER
----------

ART UNIT	PAPER NUMBER
----------	--------------

DATE MAILED:

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

# Office Action Summary

Application No.  
**09/147,721**

Applicant(s)

**Chaney et al**

Examiner

**Medina A. Ibrahim**

Group Art Unit

**1638**



☒ Responsive to communication(s) filed on Sep 18, 2000

☒ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 35 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claim

☒ Claim(s) 1-10 and 12 is/are pending in the application

Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration

☐ Claim(s) \_\_\_\_\_ is/are allowed.

☐ Claim(s) \_\_\_\_\_ is/are rejected.

☒ Claim(s) 1-10 and 12 is/are objected to.

☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some\* ☒ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

☐ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s) 5, 8

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

Art Unit: 1638

### **DETAILED ACTION**

The Group and/or Art Unit location of your application in the PTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Group Art Unit *1638*.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-10, 12, pending in this application, are under examination.

Claim 12 is newly added.

#### ***Withdrawn Objection and Rejections***

The 35 USC 112, 2nd rejection to claims 1 and dependents, the rejections under 35 U.S.C. 101 and 102 (b) to original claim 11, and the rejection under 35 USC 103(a) to claims 1-11 as being obvious over Raskin et al (US 5,787,735) in view of Brooks et al, have been withdrawn in view of Applicant's response filed on August 22, 2000.

#### ***Double Patenting***

1. Claims 1-10 and new claim 12 remain rejected under the obviousness-type double patenting as being unpatentable over each of claims 1-5 of U.S. Patent No. 5,711,784 and US 5,944,872, as indicated in the last office action for claims 1-11.

Art Unit: 1638

Applicant's request to set aside these rejections until the resolution of other outstanding issues, would not overcome the rejections; therefore, the rejection is made and maintained for the same reasons stated in pages 2-4 of the last office action.

2. Claim 12 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for the recitation of "including" which is not a U.S.-recognized term, so that it is unclear whether an open or closed term is intended. If an open term is intended, replace "including" with ---comprising---.

***Claim Rejections - 35 USC § 102/103***

Claim 12 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Brooks et al (Vegetation, 1981).

The claim is directed to a nickel hyperaccumulating plant from the genus of Alyssum with a nickel concentration of at least 2.5% (dry wt) in its above ground tissue produced by growing the plant in a soil conditioned to maintain calcium concentration of about 0.128 mM to about 5mM and pH of < 7.

Brooks et al teach the Alyssum bertolonii Desv. plant having a concentration of 10% of nickel in its dried leaves ( see, e.g., page 183, paragraph bridging the columns) which seems to be identical to the claimed plant. The method of making the plant does not confer distinguishable property to plant itself. Therefore, Applicant has the burden to show an unobvious difference.

MPEP ~~2113~~ 2113.

Art Unit: 1638

***Claim Rejections - 35 USC § 103***

3. Claims 1-10 and new claim 12 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Chaney et al (US 5,711,784, filed June, 1995), as stated in the last office action for claims 1-11.

Applicants argue that the present invention is not obvious over the '784 patent as the patent does not mention the specific soil conditions necessary to achieve the desired results in the instant invention, such as maintaining the calcium concentration from about 0.128 mM to about 5mM, and pH below 7. These arguments are not persuasive.

As stated in the last office action, claims are drawn to a method of recovering nickel from a serpentine soil by growing a nickel hyperaccumulating plant, from the wild-type species of the genus of Alyssum, on said soil until the concentration of Ni in the above ground tissue is at least 2.5%-5% of gross dry weigh (above ground tissue) while maintaining calcium concentration in the soil from about 0.128mM to about 5mM , soil pH below 7, exchangeable Ca/Mg ratio about 0.16-0.40, and in the presence of chelating agents with Fe, Mg and ammonium based N-fertilizer.

Chaney et al teach a method of recovering nickel from soil containing nickel under conditions sufficient for selected Alyssum species to accumulate at least 2.5-5% ( dry wt) recoverable nickel in its above ground tissue by maintaining soil pH of 4.5-6.2, an exchangeable calcium concentration at 20% lower than the exchangeable Mg concentration, and adding ammonium-containing fertilizer and chelating agents ( see, whole document). Both of the present invention and the patent '784 pertain to phytomining Ni and Co with the hyperaccumulating

Art Unit: 1638

Alyssum species by maintaining specific soil conditioning such as soil pH < 7 as claimed, moderate to low Ca levels, Mg-rich, exchangeable soil Ca and Mg in relation to Ca concentration, ammonium fertilizer, and chelating agents which will improve Ni uptake in excess of a 2.5 % in the above ground portions of the plant. Slight variation of Ca, Mg or Ca/Mg ratio to reach an optimum soil conditioning for Ni uptake in excess of 2.5% would not render the invention non-obvious, as stated in the last office action. The claimed range of calcium concentration, 0.128 mM to 5 mM, is quite broad, and appears to encompass or approximate that taught by Chaney et al, who obtained the same Ni levels as claimed. Applicants have not identified any particular pH, Ca concentration, or Ca/Mg exchangeable ratio which gave unexpectedly higher yields than those observed by Chaney et al. Therefore, it would have been obvious to one with ordinary skill in the art at the time the invention was made to utilize the method of phytomining nickel from nickel rich soils using Alyssum species as taught by Chaney et al, and to modify that method by incorporating the specific soil conditions for phytomining of nickel with specific Alyssum species as taught by Chaney et al, to develop optimum ranges of soil conditions for high recovery of nickel as taught by Chaney et al.

No claim is allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Art Unit: 1638

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Medina A. Ibrahim whose telephone number is (703) 306-5822. The examiner can normally be reached on Monday-Tuesday, and Thursday from 7:30 AM to 6:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paula Hutzell, can be reached on (703) 308-4310. The fax phone number for the organization where this application or proceeding is assigned is (703) 305-7401.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196.

October 31, 2000  
mai

DAVID T. FOX  
PRIMARY EXAMINER  
GROUP 180-1638

